PATENT
Attorney Docket No. 84633-000100

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:

JANE OSBOURN et al.

Application No.: 09/817,661

Filed: March 26, 2001

For: RIBOSOME DISPLAY

Examiner: Unassigned

Art Unit: 1653

RESPONSE TO RESTRICTION REQUIREMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This communication is submitted in response to the Restriction Requirement dated February 25, 2003, which set forth the following groups of claims:

I. Claims 1-14 and 21-23, characterized as drawn to a method for "obtaining a specific binding pair (sbp) that binds a complementary sbp member of interest;"

II. Claims 15-20 and 24, characterized as drawn to a method for "formulating the product into a composition comprising at least one additional component [e.g., excipient or carrier];"

III. Claims 25-26, characterized as drawn to a product described as a "nucleic acid construct" or a "library or population of RNA molecules;"

IV. Claims 27-28, characterized as drawn to a product described as a "population of viral particles;" and

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V. Claims 29-30, characterized as drawn to a product described as an "expression system."

Applicants elect to prosecute Group I, claims 1-14 and 21-23, with traverse. Applicants reserve the right to file one or more divisional or related applications to the claims of non-elected groups.

Applicants further elect the following species, each and every one with traverse, in each of Subgroups 1-10, as set forth in Office Action:

Subgroup 1: Applicants elect antibody molecules.

Subgroup 2: Applicants elect an mRNA not containing a midvariant (MDV) RNA, not containing a glycine-serine tether and containing a TMV encapsidation sequence. Applicants direct the Examiner's attention to oligonucleotide primers at pages 32-33 (HA-OAS-1 and -2).

Subgroup 3: Applicants elect the TMV coat protein.

Subgroup 4: Replication is not a claimed method step, but, with traverse, Applicants elect RT-PCR.

Subgroup 5: Applicants elect RT-PCR, with traverse. The requirement is not understood.

Subgroup 6: Applicants elect prokaryotic ribosomes.

Subgroup 7: Applicants elect glutathione not added.

Subgroup 8: Applicants elect disulphide isomerase added.

Subgroup 9: Applicants elect heparin added.

Subgroup 10: Applicants elect the use of mutagenic oligonucleotides and PCR.

Applicants believe that claims 1, 8-14 and 21-23 read on the elected Group I and elected species therein.

REMARKS

The Examiner has required restriction to one of five inventions characterized as follows:

I. Claims 1-14 and 21-23, characterized as drawn to a method for "obtaining a specific binding pair (sbp) that binds a complementary sbp member of interest;"

II. Claims 15-20 and 24, characterized as drawn to a method for "formulating the product into a composition comprising at least one additional component [e.g., excipient or carrier];"

III. Claims 25-26, characterized as drawn to a product described as a "nucleic acid construct" or a "library or population of RNA molecules;"

IV. Claims 27-28, characterized as drawn to a product described as a "population of viral particles;" and

V. Claims 29-30, characterized as drawn to a product described as an "expression system."

It is the contention of the Examiner that the five inventions are separate and distinct because the claims in Groups I and II are related as different methods and Groups III-IV are related as different products and which are directed to different purposes, use different materials recite different method or process steps for the preparation of different product(s), screening of different characteristics, such as different binding affinities, different biochemical reaction conditions, etc., or lead to different final results.

Applicants have, as set forth above, elected with traverse to prosecute the claims of Group I, claims 1-14 and 21-23, characterized as drawn to a method for "obtaining a specific binding pair (sbp) that binds a complementary sbp member of interest."

Applicants traverse this restriction requirement and respectfully request the Examiner reconsider the restriction requirement to achieve a proper, compact and expedited prosecution of the present invention.

Restriction can be required by the Office for certain reasons as set forth in the MPEP under section 800. Restriction is required so that an undue burden is not placed on the Office in prosecuting the application, so that the statutory fee structure is not subverted, and so that the integrity of the examination and classification system of the Office are not jeopardized. Requirement for restriction is balanced against the right of the Applicants to claim their

invention as they require to adequately protect their invention and to provide for a compact and expedited prosecution.

Applicants respectfully submit that the presently claimed invention relates to methods and products which together comprise a single invention. Under 35 U.S.C. § 121, there are two criteria for a proper requirement for restriction between patentably distinct inventions:

(1) the inventions must be independent or distinct as claimed; and

(2) there must be a serious burden on the examiner if restriction is not required.

See MPEP § 803. Neither of these criteria is met by the presently claimed invention which relates to the single invention of methods of obtaining specific binding pair (sbp) members that bind complementary sbp members of interest and to related nucleic acid constructs, libraries, populations of viral particles and expression systems. All of claims 1 to 24 fully incorporate claim 1, so that a complete search of claim 1 will as a necessity encompass fully the subject-matter of all of claims 1 to 24. Furthermore, all of claims 25 to 30 fully incorporate claim 25, so that a complete search of claim 25 will as a necessity encompass fully the subject-matter of all of claims 25 to 30. Claims 1 and 25 contain corresponding technical features.

A thorough search of the patent or scientific literature directed to such methods and to uses thereof would encompass art in the field of the invention as claimed. For example, a thorough search encompassing the claims of Group I would encompass art in the field of Group II, all of which claims depend from claim 1. Further, Applicants believe a thorough search encompassing the claims of Group I would encompass art in the field of Groups III-IV. Thus, prosecution of the invention, as a whole, would not place a burden on the Examiner sufficient to justify restriction.

Therefore, Applicants respectfully request that the Examiner reconsider the restriction requirement in light of office practices common to the art. In particular, Applicants request that at least the claims of Groups I and II be combined for prosecution on the merits.

Applicants further traverse the requirement that Applicants elect 10 different species within Group I. The Examiner alleges that the species within each Subgroup set forth in the Office Action are patentability distinct from each other.

Applicants have provisionally elected, with traverse, species within the Subgroups, as set forth above. Applicants understand that even if the election of species requirement is maintained then once a generic claim is found to be allowable, additional species will be rejoined by the Examiner to preserve Applicants' right to claim their invention as they require to adequately protect their invention and to provide for a compact and expedited prosecution. See MPEP § 809.02.

However, Applicants traverse the requirement for species elections because the Examiner's designation of species within each Subgroup does not appear to comport with proper restriction practice. In particular, the designation of species is complex and does not appear to be organized along a particular search strategy. Instead, the Examiner appears to have designated all possible species, breaking the invention into a large number of incoherent pieces.

The presently claimed invention relates to an improvement in ribosome display, *i.e.*, a new and non-obvious modification to that technology. Ribosome display technology itself is not new technology; indeed it is practiced commercially and is of great use, as it has been for some time. The modification provided by the present invention does not suddenly remove the usefulness of the technology in its existing various ways, for example in allowing different kinds of specific binding members to be employed, any type of antibody fragment and so on. For the Examiner to require election of species among features that are not relevant for patentability and from which a person of ordinary skill can select as of choice is to provide an undue burden on the Applicants, and indeed on the Examiner. Rather, there is no burden in searching across the breadth of the various species that the Examiner seeks election between.

Another example of where no feature of patentability resides is in the choice of downstream expression system for production of the specific binding member following the ribosome display steps (*e.g.*, claim 22). The skilled person is well able currently to choose between a large variety of host cells for this purpose (proteins have been expressed recombinantly in countless different host cells), and there is no inventive feature in the choice. The Examiner in seeking to divide a straightforward biotechnological invention into multiple species and sub-species is creating the potential for a multiplication of cost and complexity of

searching where in fact a single search relating to the features that actually make up the contribution provided by the invention will be fully adequate.

In cases where an election of species requirement is proper then the Examiner should group together species considered clearly unpatentable over each other, and also identify species that are considered patentably distinct from each other. MPEP § 808.01(a). The Examiner has not done such an analysis. Instead, the Examiner appears to have designated all identified species as patentably distinct and placed the burden on Applicants to demonstrate otherwise. This is, respectfully, an improper shifting of the burden to the Applicants and is not consistent with proper restriction practice.

The designation of species also does not appear to be proper because the designated species do not appear to be restricted to those with mutually exclusive characteristics. See MPEP § 806.04(f) ("The general test as to when claims are restricted, respectively, to different species is the fact that one claim recites limitations which under the disclosure are found in a first species but not in a second, while a second claim recites limitations disclosed only for the second species and not the first.") and MPEP § 808.01(a).

As noted, there are species of Group I that are not mutually exclusive. For example, in Subgroup 1, the Examiner has required election of a single species of specific binding pair member, citing page 19, line 5 of the specification. The Examiner suggested scFv antibody molecules. The Examiner appears to be taking the position that scFv antibody molecules are patentably distinct from the other recited antibody molecules. The invention is useful with any specific binding member. The Applicants have elected with traverse, antibody molecules, a species of specific binding member. If the Office regards this as an insufficient election (although the Applicant believes the requirement should in fact be withdrawn entirely), then the Applicant elects, with traverse, scFv antibody molecules.

Similarly, for Subgroups 7, 8 and 9, the Examiner appears to believe the species within these Subgroups are patentably distinct, but the Examiner has not provided any reasoning to support the assertion that these species are patentably distinct.

Further, the totality of species designated in Group I are not mutually exclusive. The Examiner has designated 10 different "Subgroups" of species. Applicants do not understand the

rational for such identification of Subgroups because the Subgroups do not appear to be mutually exclusive of each other. Moreover, a proper search will encompass multiple species and subspecies and the Office does not appear to have identified a search strategy that would require including within the search particular stated "species" and "subspecies" while excluding from the search other stated "species" and "subspecies." The Applicants respectfully believe that a search of claim 1 will also include a search of the subject-matter of the dependent claims.

Thus, Applicants respectfully request that if the species election requirement is not withdrawn, then at least the Examiner reformulate the election of species to correspond to the intended search parameters so the Applicant can understand what the Examiner seeks to achieve and can make proper species requirements in response to a proper requirement.

As set forth above, Applicants further request that Group II be rejoined with Group I. If these Groups are rejoined, Applicants elect the species set forth above for Subgroups 1-9. Applicants further make the following elections, with traverse, as required for Subgroups 10-12 of Group II:

Subgroup 10: Applicants elect a pharmaceutically acceptable excipient (although ordinary skilled persons can readily add any component to a composition).

Subgroup 11: Applicants elect an antibody constant region (although ordinary skilled persons have been able to make fusion proteins of countless variety for many years).

Subgroup 12: Applicants elect a bacterial expression system (although eukaryotic *e.g.*, mammalian expression systems, have long been at the disposal of the ordinary skilled person).

If Groups I and II are rejoined, then additional claims 15-20 and 24 will read on the elected Groups and species within those Subgroups.

Thus, Applicants respectfully request that the Examiner reconsider the necessity for a restriction requirement in this case. In addition, without acquiescing to the propriety of the restriction requirement, Applicants respectfully request reformation of the species designation to include all the species identified by the Examiner, or at least to conform to some reasonable number of clearly identified and properly reasoned mutually exclusive species within Groups I and II.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 206-467-9600.

Respectfully submitted,

Dated: June 25, 2003

By: _____
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